

Chemical Inventory Best Management Practices

Introduction

The first step in developing a comprehensive chemical health and safety plan is to inventory existing chemicals. This may pose risks to the individuals taking the inventory and ample time should be allowed to properly conduct the inventory.

Only those who have technical knowledge about the chemicals should be involved in the inventory. Students should never be involved. In some cases an inventory may take two people many hours to complete. It is important not to underestimate the amount of time required to complete the inventory. Many teachers do their inventory just after school gets out for the summer to identify chemicals that need disposal and those compounds that need to be restocked for the coming school year.

If you are uncomfortable taking the inventory or discover unknown hazards, get help. Contract the inventory with a hazardous waste management company trained in chemical identification and inventory processes.

If you are new to the school and/or a recent inventory has not been conducted, be especially cautious. Over time chemicals can become unstable or degraded. **Warning signs may include unmarked containers; bulging, leaking, or rusted containers; containers with cracked or degraded caps; the presence of a liquid above a solid; or crystals in a liquid. If any of these are present, the chemical should not be moved, even for the inventory.** It is best to be cautious. Contact a waste management company for assistance and disposal. In a chemical emergency, such as an explosive or unstable chemical or unmanageable chemical spill, contact 911 or the local fire department.

An inventory will be needed to generate a disposal list and to determine the quantity of the chemicals to be retained or ordered for the coming year. Hazardous waste management companies can use your inventory to estimate disposal costs. Therefore, it is important to include sufficiently detailed information about the chemical to avoid unexpected price changes. For example, anhydrous aluminum chloride is much more expensive to dispose of than is hydrated aluminum chloride. In developing a disposal list it is important to include the proper chemical name, chemical formula, expiration date, container size, and the approximate amount present.

Inventory best practices

- Allow ample time to conduct the inventory and if possible, work in pairs.
- Designate other personnel to periodically check on the safety of the inventory staff. If an accident were to incapacitate the people performing the inventory, the other personnel can respond.
- Notify the local fire department of the time and day of the inventory in order to expedite emergency response. They may also be able to provide technical assistance regarding emergency procedures.

- Ensure the areas in which you working are intrinsically safe. Is there adequate lighting and ventilation? Is there access to a phone, eyewash, and a safety shower?
- Wear appropriate personal protective equipment. This should include gloves, chemical splash goggles, a lab coat, and closed-toed shoes. Ensure emergency telephone numbers are clearly posted near all available telephones.
- Review published safety guidelines for working around lab chemicals.
- Review the school's Chemical Hygiene Plan.
- Have a written response plan nearby in case of a spill or accident. Share the response plan with an administrator and the maintenance staff.
- Ensure easy access to spill cleanup materials. Spill cleanup materials should be compatible with the chemical spilled.
- Divide tasks. One person reads the chemical information, the other person records. Be sure to pronounce the chemical correctly. The recorder should read the chemical name after it is logged to confirm it is correct.
- Evaluate the storage area before entering for site safety. Is the room free of clutter and easy to access? Are there obvious chemical vapors? Are broken containers present? Is there evidence of spilled chemicals? Are the shelving units secured to the walls? Are there loose electrical wires? Where is the eye wash?
- Record the room number and the date on your record sheet. Number each self to identify here the chemicals are stored. Record name of each chemical, the size of the container, the type of container, the approximate amount of chemical present, the container's condition (e.g., rusted, cracked, etc.), the presence of spilled material, defects in the shelving or its supports, corroded wires or gas lines, or any other indicator of a hazard present. Try not to disturb the chemical containers. Do not touch or move a chemical if it is listed as a potential explosive or the container appears distorted in any manner. **Serious injury can occur from merely touching the top of a container of picric acid or expired ethyl ether.** Use extreme caution not to knock any container to the floor.
- If the inventory is conducted over several days, mark where you stop at the end of each day.
- Identify contents of chemical kits. Although kits are particularly time consuming to inventory, each container must be identified. Older kits may contain unlabeled chemicals with only manufacturer's numbers on them. If contents are unknown, record the manufacturer's contact information, the chemical number, the size of the container, and the kit identification number. After the inventory is complete, this information can be used to properly identify each chemical contained in the kit. Do not ignore the kits; many contain carcinogens such as cadmium powder or toxic chemicals such as sodium azide.
- If preserved specimens are present, record the preservative used. Contact the supplier to determine if the specimens are capable of out-gassing formaldehyde. Many specimens contain some formaldehyde solution.
- Remember to look everywhere. Examine all areas in each room including desks, drawers, refrigerators, closets, under the sink, and storage cabinets.

This inventory procedure was adapted from Chem Info Net <http://cheminfonet.org>, Maine Department of Environmental Protection <http://www.maine.gov/dep/mercury/school.htm>, Flinn Scientific Catalog <http://www.flinnsci.com/Sections/Safety/labChemSafety> and Montana Department of Environmental Quality, School Lab Web site [asp](http://www.mdeqschoollabs.com) and <http://www.mdeqschoollabs.com>.